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(71) Applicant (*for all designated States except US*): **YISSUM RESEARCH DEVELOPMENT COMPANY OF THE HEBREW UNIVERSITY OF JERUSALEM [IL/IL]**; Hi Tech Park, Edmond Safra Campus, Givat Ram, 91390 Jerusalem (IL).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **SA'AR, Amir [IL/IL]**; 46 Hermon Street, 90805 Mevaseret Zion (IL). **SHAPPIR, Joseph [IL/IL]**; 30 Hermon Street, 90805 Mevaseret Zion (IL).

(74) Agent: **REINHOLD COHN AND PARTNERS**; P.O. BOX 4060, 61040 Tel Aviv (IL).

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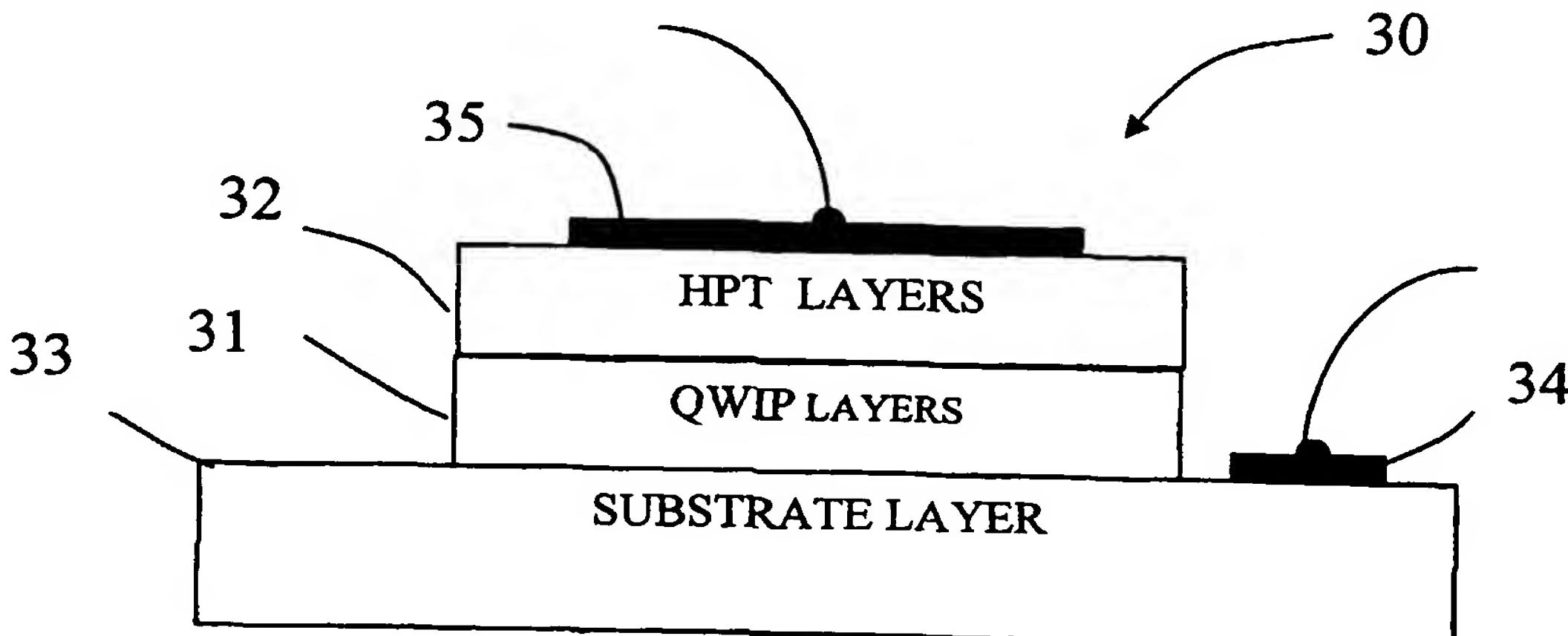
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(54) Title: VOLTAGE TUNABLE INTEGRATED INFRARED IMAGER



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(57) Abstract: An integrated thermal imager for detecting combined passive LWIR or MWIR radiation of a scene and active SWIR radiation of a laser source is described. The imager includes a two-dimensional focal plane array (2D-FPA) constituted by an assembly of voltage tunable photodetectors. Each voltage tunable photodetector integrates a quantum well infrared photodetector (QWIP) together with a heterojunction bipolar phototransistor (HBPT), thereby forming a pixel element in the 2D-FPA.

INTERNATIONAL SEARCH REPORT

International Application No
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A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01L27/146 H01L31/0352 H01L31/11

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97/17719 A (FRAUNHOFER GES FORSCHUNG ; SCHNEIDER HARALD (DE); SCHOENBEIN CLEMENS () 15 May 1997 (1997-05-15) figures 1,2 page 7, paragraph 1 - page 9, paragraph 3 page 11, paragraph 1 page 12, paragraph 3 ----- -/-	1-58
Y		59,60

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Visscher, E

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International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	<p>COHEN N ET AL: "A monolithic LWIR/NIR multispectral QWIP for night vision and see spot" INFRARED PHYSICS & TECHNOLOGY ELSEVIER NETHERLANDS, vol. 42, no. 3-5, September 2001 (2001-09), pages 391-396, XP002299329 ISSN: 1350-4495 figure 1 page 524 - page 525</p> <p>-----</p>	59,60
X	<p>SCHNEIDER H ET AL: "VOLTAGE-TUNABLE TWO-COLOR DETECTION BY INTERBAND AND INTERSUBBAND TRANSITIONS IN A P-I-N-I-N STRUCTURE" APPLIED PHYSICS LETTERS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 68, no. 13, 25 March 1996 (1996-03-25), pages 1832-1834, XP000582387 ISSN: 0003-6951 figures 1,2 page 1832, column 2, paragraph 2 - page 1833, column 2, paragraph 1 page 1834, column 1, paragraph 4</p> <p>-----</p>	1-58
X	<p>RYZHII V ET AL: "Device model of integrated QWIP-HBT-LED pixel for infrared focal plane arrays" ESSDERC 2002. PROCEEDINGS OF THE 32ND EUROPEAN SOLID-STATE DEVICE RESEARCH CONFERENCE UNIV. BOLOGNA BOLOGNA, ITALY, September 2002 (2002-09), pages 643-646, XP008036430 ISBN: 88-900847-8-2 figures 1,2 Section 1. Introduction</p> <p>-----</p>	1,31
A	<p>RYZHII V ET AL: "Analysis of dual-band quantum well photodetectors" JOURNAL OF APPLIED PHYSICS, AMERICAN INSTITUTE OF PHYSICS. NEW YORK, US, vol. 91, no. 9, 1 May 2002 (2002-05-01), pages 5887-5891, XP012056355 ISSN: 0021-8979 figure 1 Section I: Introduction Section II: Model page 5891, column 1</p> <p>-----</p> <p style="text-align: center;">-/--</p>	1,31,59

INTERNATIONAL SEARCH REPORT

International Application No

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	LIU H C ET AL: "GaAs/AlGaAs quantum-well photodetector for visible and middle infrared dual-band detection" APPLIED PHYSICS LETTERS AIP USA, vol. 77, no. 16, 16 October 2000 (2000-10-16), pages 2437-2439, XP002299330 ISSN: 0003-6951 figures 1,2 page 2437 – page 2438, column 2, paragraph 2 -----	1,31,59

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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